22220

23124

3 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answer with neat sketches wherever necessary.

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

(6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following: **10**

a) Differentiate between active and passive components. (two points)

b) Give brief classification of resistance.

c) Select value of capacitor to design 30V.DC (O/P) power supply.

d) List out the two factors (parameters) which could find out from hysteresis curve of magnetic materials.

e) List the Donar impurities. any two

f) List different types of filters. any four

g) Draw symbol of –

i) LED

ii) IRLED

Marks

2. Attempt any THREE of the following: **12**

a) Give the construction and working of linear and logarithmic potentiometer.

b) Identify the materials used for construction of following type of capacitors and give justification –

i) Fixed capacitor

ii) Electrolytic capacitor

iii) Air gang capacitor

iv) Trimmer capacitor

c) Compare variable capacitor with fixed capacitor.

d) Define filter. Draw I/P and O/P wave forms of –

i) Shunt capacitor filter

ii) Series inductor filter

3. Attempt any THREE of the following: **12**

a) State the Faradays low of electromagnetic induction and list any two application of it.

b) List out soft and hard magnetic materials and draw BH curves of it.

c) Draw V-J characteristics of P-N junction diode and define static and dynamic resistance.

d) Calculate the v'ge across VDC and the current IDC, flowing through a R = 200 Ω resistor connected to a 240 V rms single phase half-wave rectifier as shown in Figure No. 1. Also calcualte the DC power consumed by the load.

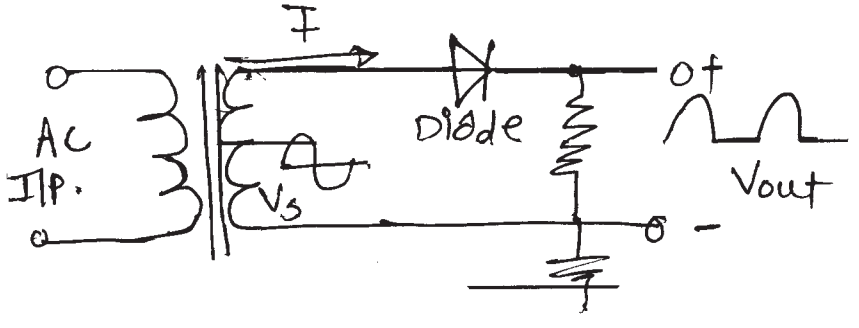

Fig. No. 1

Marks

4. Attempt any THREE of the following: **12**

a) List and define any four sources of biomedical signals.

b) Give (state) the origin of following signals –

i) ECG

ii) EEG

iii) EMG

iv) EOG

c) List one application of following type of resistors –

i) Carbon film resistors.

ii) Standard wire-wound resistors.

iii) Light dependent resistors.

iv) Temperature dependent resistors.

d) List the specification of air-gang capacitor.

e) Give colourcode for 100 Ω, 10%.

5. Attempt any TWO of the following: **12**

a) Give construction and working of Zener diode.

b) Give applications of (01 each)

i) PN junction diode,

ii) Zener diode,

iii) PIN diode,

iv) Schottky diode,

v) Tunnel diode,

vi) IRLED.

c) Give two examples each of following equipment.

i) Analytical equipment.

ii) Diagnostic equipment.

iii) Intensive care equipment.

Marks

6. Attempt any TWO of the following: **12**

a) Draw the ckt. diameter of full wave rectifier give it's working and draw the I/P and O/P waveforms.

b) With the help of graph explain cell-potential. (polarisation, depolarisation, repolarisation)

c) Draw basic medial instrumentation system and list it's objective.

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